DOE/EH–0680

Bechtel BWXT, Idaho, LLC

Idaho National Engineering and Environmental Laboratory

Report from the DOE
Voluntary Protection Program
Onsite Recertification Review
May 3-7, 2004

U.S. Department of Energy
Office of Environment, Safety and Health
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Contents

Abbreviations and Acronyms

ALARA	As low as reasonably achievable
ATR	Advanced Test Reactor
BBWI	Bechtel BWXT Idaho, LLC
CEST	Company Employee Safety Team
DOE	U.S. Department of Energy
DOE-VPP	Department of Energy Voluntary Protection Program
EH	Office of Environment, Safety and Health
ES&H	Environment, Safety and Health
EST	Employee Safety Team
HAZWOPER	Hazardous Waste Operations and Emergency Response
ICP	Idaho Completion Project
IHR	Independent Hazard Review
INEEL	Idaho National Engineering and Environmental Laboratory
INPO	Institute of Nuclear Power Operations
ISMS	Integrated Safety Management System
OSHA	Occupational Safety and Health Administration
PM	Preventive Maintenance
PPE	Personal Protective Equipment
PRD	Program Requirements Document
TAN	Test Area North
TRA	Test Reactor Area
TRAIN	Training Records and Information Network
VPP	Voluntary Protection Program
WASP	Worker-Applied Safety Program

Introduction

This report summarizes the results of the May 3-7, 2004, Department of Energy Voluntary Protection Program (DOE-VPP) recertification evaluation of BBWI of Idaho Falls, Idaho by a Headquarters-appointed VPP Recertification Review Team (Team). The Office of Environment, Safety and Health (EH) conferred DOE-VPP Star status on the prime contractor, Bechtel BWXT Idaho, LLC (BBWI) in May 2001, and directed this recertification review after three years, as DOE-VPP Policy requires.

Background

BBWI, which operates the Idaho National Engineering and Environmental Laboratory (INEEL) for DOE, is a partnership between Bechtel National Incorporated, BWX Technologies, and Inland Northwest Research Alliance. BBWI assumed responsibility for operating INEEL on October 1, 1999, and is responsible for site operations, maintenance of site infrastructure, site cleanup, environmental restoration, and facility decontamination and decommissioning of INEEL and the Idaho Completion Project (ICP). In 2002, DOE transferred the Program Secretarial Office function for INEEL from the Office of Environmental Management to the Office of Nuclear Energy, Science and Technology. At the time of the onsite review, BBWI employed approximately 5,062 workers.

Goals for the DOE-VPP Recertification Team

BBWI has, as required, submitted a DOE-VPP annual status report each February since 2002 that documents continuous quality of its DOE-VPP program. The Team found that, in reviewing BBWI's self-assessments and routine self-examinations, BBWI showed continuous improvements to its program. The Team saw that workers and their supervisors or managers are working to control and to mitigate safety and health hazards. Employees remain well trained in hazard recognition and actively utilize those skills to identify hazards and potential hazards. BBWI has consistently reported major adjustments and refinements to its baseline program that have resulted in significant improvements; for example, the use of online safety meetings to facilitate communication with employees who are on travel, personal leave, or involved in significant programmatic efforts. Accordingly, the Team's primary goal was to verify continued and enhanced DOE-VPP program performance from the spring of 2001 to the present.

Changes since Designation as a DOE-VPP Star Site

- The worker population has decreased from 7,285 in 2000 to 5,062 in October 2003.
- The DOE-VPP program requirements have been incorporated into Program Requirements Document (PRD) 5119, *The Program Requirements for the Voluntary Protection Star Process at the INEEL*.
- The roll-down of safety requirements to subcontractors was completed in 2003 with Management Control Procedure (MCP)-1185 *Acquisition of Materials*, and *Service Acquisitions.*
- The subcontractor Total Recordable Case rate in 2000 was 10.6, which was a concern expressed in BBWI's DOE-VPP application. The 2003 rate decreased to 2.44, and the rate from January 1 to May 1, 2004 was 0.00, which is a significant improvement. In recognition of its achievement, the Construction organization was presented with the Company Employee Safety Team (CEST) 2003 Safe Production Award.
- The primary tool for performing a causal analysis in 2000 was the Tap Root® methodology. BBWI has since adopted company standard 1113, *Cause Analysis and Corrective Action*

Development. The Human Performance section has been particularly enhanced with the inclusion of error precursors.

- In 2000, employees had three avenues for reporting safety concerns and at-risk behaviors:
  - Safety concerns through MCP-598, *Corrective Action System*
  - At-risk behaviors through the Worker-Applied Safety Program (WASP)
  - Employee concerns through the company-level Employee Concerns Program.

  BBWI has since added a fourth avenue for reporting "close calls." Employees can now submit a Close Call card. The information collected is reviewed and trended by the VPP unit Employee Safety Teams (ESTs).
- Online safety meetings have been instituted to assist employees who are on travel, personal leave, or involved in significant programmatic efforts.

Management Leadership

"Management's worker empowerment has facilitated the safety culture advances at this site"

– INEEL Employee

Team interviews revealed that the BBWI President, directors, and managers continue to demonstrate a Star level of commitment to employee safety. The Team saw evidence of this commitment not only in policy statements and program and safety promotional activities, but also by the manner in which employee-identified safety and health concerns are addressed and by what employees actually say and believe about their managers. The employees interviewed spoke highly of management, stating that they felt free to approach them with safety and health concern, and that they felt the appropriate personnel would address their concerns with fairness and honesty.

Management has positively impacted the site's safety record and influenced subcontractors doing business on- and off-site. A local subcontractor, 3-D Fire Protection Company, attributes its on- and off-site safety record to its experience working at INEEL with BBWI management and the DOE-VPP program. This association has been instrumental in this company's growth and recognition beyond INEEL.

Management continues to work closely with employees on the CEST, ESTs, and subteams. The joint participation of workers and managers continues to be an effective tool for planning and administering the safety process.

Management visibility continues to be demonstrated by participation in safety and health activities, maintaining a policy of accessibility and an "open door" policy that ensures that any employee can express a safety and health concern to any level of management. The Team verified that employees felt that most concerns are likely to be resolved or addressed with their first-tier managers or with their supervisors. In addition, employees felt the safety committees and first-line supervisors were effective in handling safety and health issues. When one manager was asked about management visibility, he stated that "Employees have to know you support them," and acknowledged the importance of his getting out in the field on a daily basis. By their daily visits to the worksites, management continues to demonstrate to employees that their interest is in the workers as much as their work. This presence gives managers the opportunity to know their workers by name; thus reinforcing the "extended family" culture the site continues to work toward.

The General Manager is ultimately responsible for the Safety and Health (S&H) program with assistance of full-time professional, technical, and administrative environment, safety and health (ES&H) team members. Adequate resources, including staff, equipment, materials, funding, training, and professional expertise, have been committed to workplace safety and health. This is evident by the programs reviewed, the high level of employee involvement, and competence of the BBWI workforce.

Employee Involvement

Employee interviews clearly indicated that BBWI employees are actively engaged in the safety and health program and, in many cases, are the originators of ideas that significantly contribute to the success of the S&H program. The employees also stated that management has empowered them to proactively administer the S&H program, thus meeting the DOE-VPP criteria for employee involvement.

Degree and Manner of Involvement

A variety of communication efforts are underway to support employee involvement. Examples of these efforts are listed below.

- VPP Homepages
- Posters
- Daily Constitutional
- E-mail Notices
- Personal cards

In addition, employees are involved in a variety of safety and health committees, which are discussed later in this report. Employees are involved in the formal and informal reporting of hazards, they have stop-work authority, and they have input into systems and procedures for S&H incentive programs and disciplinary procedures. They are involved in safety and health investigations of accidents, illnesses, and injuries, and receive appropriate training for this function. Of note is their "DO IT" (Define, Observe, Intervene and Test) program used to define critical behaviors, observe the work areas for such behaviors, intervene to change the behaviors, and test the result. Employees are part of the formal Integrated Work Control Process that helps to streamline work by making work planning and execution more efficient and safer. The Team found that communication also benefits from BBWI's Union Safety Representative program that was instituted in 1999.

Safety and Health Committees

BBWI continues to utilize the ESTs on a company-wide basis. A combined team known as the CEST includes representatives of each of the 12 BBWI DOE-VPP units. Information moves back and forth between the two teams, which were established in August of 1995. The teams are continuing to improve in their ability to deal with a variety of safety-related subjects. The interviews indicate that employees have ample opportunity to serve on one of the teams. Additionally, team members receive additional training in safety-related areas such as inspection techniques and hazard recognition.

Best Practices

- The Close Call Program appears to be an excellent next step for further maturing a quality safety program by enabling employees to identify and resolve actual near misses;
- The Human Performance Fundamentals program appears to be the next logical step for DOE-VPP at this site. It also has a great potential for use throughout the DOE complex because it complements the Department's Integrated Safety Management System (ISMS) requirements. This Institute of

Nuclear Power Operators (INPO)-developed program is also a direct fit for any safety and health effort involving nuclear operations.

- I-Stretch and Passport programs address injury prevention through stretching exercises at the start of every day and help employees adopt a more physically active lifestyle, which are particularly beneficial to an aging workforce.

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Opportunities for Improvement

The Team's review identified three Opportunities for Improvement, which are listed below.

- BBWI may wish to consider expanding the numbers and craft variety of the site-wide Union Safety Representative program.
- BBWI should further develop and ensure consistency of its facility safety recognition programs.
- BBWI should require timely employee or committee feedback to any formal or informal requests, suggestions, problems, or concerns.

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Interview Comments

Employee interviews were positive. Excerpts are included below.

- I have worked at most of the DOE facility sites and INEEL is the safest one.
- My wife and children are especially happy that I work in such a safe work environment.
- There are no boundaries in getting the job done safely at this facility. We have real teamwork.
- 99.2 percent of the employees have attended and participated in our safety meetings in the last 3 months.
- 95 percent of our staff knows each other by name, including their family members. You can't help but care about the health and safety of your extended family.
- The safety culture that I have been exposed to at INEEL has changed the way my family and I work and play at home.
- Management's worker empowerment has facilitated the safety culture advances on this site.

Worksite Analysis

On-site review and interviews indicated that BBWI performs worksite analyses. Three processes have been implemented to address worksite analyses for (1) maintenance and construction activities (STD-101, *Integrated Work Control Process*), (2) operational activities (MCP-3562, *Hazard Identification, Analysis, and Control of Operational Activities*), and (3) research and development activities (MCP 3571, *Independent Hazard Review*). These processes establish mechanisms that foster employee involvement in identifying and mitigating hazards in the work place. During the on-site review, the Team reviewed a number of work packages for maintenance activities at the Test Reactor Area (TRA) and attended an independent hazard review at the Idaho Research Center (IRC). The work packages contained evidence of hazard identification and mitigation and the use of safe work permits. During discussions with craftspeople about the use of Job Safety Analyses, an employee stated, "Everyone knows this is how we do business. All levels of management have supported it." Regarding the Independent Hazard Review (IHR) process at the IRC, a researcher stated, "The most visible VPP is in the IHR process." Another researcher reinforced that the IHR is the recognized process for reviewing and authorizing work at the IRC. The IHR documentation at IRC clearly incorporated hazard identification and mitigation activities into the research planning and authorization process.

The lockout and tagout program at INEEL represents a continuing challenge for BBWI. During the past 3 years, BBWI has developed and implemented several significant updates and revisions to the program. However, performance and procedural problems have continued to occur. The most recent revision to the lockout and tagout program was issued on April 1, 2004 (PRD-5051, Chapter IX – *Lockout and Tagout*). When characterizing the changes in the program, one manager stated: "This revision is the worker's lockout/tagout program. The old one was management's lockout/tagout program." The most recent revision was developed with extensive worker involvement and participation. Although the revision had been in place for about a month at the time of this review, both craft workers and management were optimistic about their initial experiences, and anticipated additional benefits as equipment-specific lockout and tagout documentation is developed.

Routine, general hazard control and compliance verifications were being conducted in accordance with MCP-3449, *Safety and Health Inspections at the TRA and IRC*, and included inspections performed under the auspices of the ESTs and local managers. The self-inspection programs at both areas were active and functional. At TRA, the EST had tailored building inspection checklists for office areas, shop areas, and laboratory areas. Responsible managers were assigned to address unsatisfactory areas. The Trend Analysis Subcommittee evaluated the information and identified categories for additional attention such as building condition and housekeeping.

Opportunity for Improvement

The self-inspection activities conducted by the IRC EST were not as structured as those at TRA, and tracking and feedback on corrective actions was not clearly defined. Problems that could be corrected within 24 hours were not considered for inclusion in the Issue Communication and Resolution Environment. Assignment of a responsible person to resolve problems and provide feedback on the status of those actions was informal. An opportunity for improvement exists at the IRC to better define the objectives, tracking, and feedback for EST self-inspection activities.

Strengths

Workers were enthusiastic about their ownership of, support to, and participation in processes and activities that foster safety and health. Examples of these programs are I-Stretch, Passport, Community Outreach, Trending, WASP, Close Call, and Human Performance. During the on-site review, the Team selected the WASP, Close Call Program, and Human Performance Programs for additional evaluation.

The WASP is an employee-owned behavior-based safety improvement process at the INEEL. The philosophy of actively caring and focusing on behaviors was initiated in about 1993 in several operating organizations. The WASP has continued to expand, and now includes checklists for surge protectors and extension cords, sprains and strains, ergonomics, slips and falls, error precursors, computer workstations, laboratory observation, lifting, general purposes, and vehicle safety. The checklists help to reinforce desirable behaviors in both the individual performing a WASP observation and the person being observed. During interviews, a craftsman noted that WASP observation cards were even included in some work packages to promote safety awareness and for employee use.

BBWI recently established the Close Call Program to promote reporting and trending of minor incidents. A close call is defined as an event where a person has come in contact with a hazard but was not injured. The program offers an excellent opportunity to proactively gather safety-related information. Interviews with workers and management suggest that information needs to be disseminated about the program to reinforce program objectives and promote participation. Additional data collected on the program will be analyzed to evaluate trends and safety improvement opportunities.

BBWI willingly accepted the Safety Improvement Challenge issued by the DOE Under Secretary of Energy, Science, and Environment in the first quarter of calendar year 2004. The challenge is to reduce the number of near misses, the Total Recordable Case rate, and the Lost Workday Case rate by 20 percent during the final quarter of calendar year 2004. BBWI's action plan includes implementing the recent changes to the lockout and tagout program, adopting an enhanced performance analysis and review process for near misses, and using INPO human performance management concepts and tools.

Integrating and implementing human performance management concepts and tools into project planning, work planning, pre-job briefings, work observation, critiques, accident investigations, and causal analysis presents a unique and exciting opportunity for improving operational performance and reducing the frequency and severity of safety problems. Human performance management appears to be the next logical step for the DOE-VPP at the INEEL, and it has great potential for use throughout the DOE complex. Although many of the tools have been developed by INPO for the commercial nuclear power industry, they are directly applicable to safety and health efforts in any organization, particularly for DOE because they complement other initiatives such as ISMS, Conduct of Operations, and the Under Secretary's Safety Challenge.

The pilot program at TRA appears to have gained the greatest experience with human performance concepts and tools, with about three-quarters of the work force having attended the initial training sessions. WASP observation checklists have been developed to promote worker use of error precursors in evaluating work and identifying potential problem areas. During the last year, BBWI conducted a case study of anomalies at the Advanced Test Reactor (ATR) using human performance principles to determine the barriers that worked. Based on the study, BBWI took corrective actions that improved operational performance as well as safety performance. Additional benefits will accrue as management and workers identify latent organizational weaknesses and develop effective defenses to mitigate them. A manager at ATR noted that human performance management is not an overnight change, and that implementation will require a long-term commitment.

Hazard Prevention and Control

The Team found that the level and complexity of hazard prevention and control by BBWI meet DOE-VPP criteria. The subelements of this tenet have been spot-checked and confirmed through employee interviews.

Bechtel has a full complement of safety and health professional staff, including board-certified physicians, registered nurses, certified industrial hygienists, safety engineers and health physicists, professional engineers, certified emergency medical technicians, fire protection specialists, and others. BBWI has clearly defined safety and health requirements for all employees, and managers and employees receive positive reinforcement as well as disciplinary actions. BBWI provides the necessary personal protective equipment (PPE) required to protect workers from hazards that cannot be otherwise eliminated or avoided by engineering or administrative controls. A variety of equipment is made available, including gloves, boots, safety glasses, hearing protection, and respirators. Employees are trained and undergo appropriate medical evaluation before being permitted to use PPE.

BBWI has implemented a comprehensive preventive and predictive maintenance program to reduce the potential for unplanned equipment failures and mitigate the effects of those failures. BBWI also has a mature emergency preparedness program in which employees practice scenarios (using drills and exercises), coordinate exercises with offsite agencies, and maintain a comprehensive response plan. BBWI implements an as low as reasonably achievable (ALARA) radiation protection program that allows it to achieve and maintain exposure levels far below the applicable controlling limits of 10 CFR 835, *Occupational Radiation Protection*. BBWI also has an integrated medical services program in which medical staff are involved in hazard analysis, early recognition, and treatment.

Safety and Health Training

The Team verified that BBWI's safety and health training program continues to be comprehensive and well administered. The subelements of this tenet have been spot-checked and confirmed through employee interviews.

Employees at all levels receive training on general safety and health issues and on job-related functions. While some craft personnel felt that the computer-based training (CBT) for the 8-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher was not as effective as classroom training, BBWI management felt that the CBT was quite effective and is permitted under Occupational Safety and Health Administration (OSHA) regulations. The Team concluded that use of CBT is permissible to satisfy the HAZWOPER refresher requirement. The Team consistently heard employees remark that BBWI's training program is top-notch and that it provides the necessary tools needed to make sound decisions when employees are confronted with hazardous and potentially hazardous conditions.

BBWI managers and supervisors are aware of their safety and health responsibilities for themselves and for their employees. During the Team's interviews, managers and supervisors were able to explain the training process and the procedures that have been instituted to ensure each employee receives the necessary training as it relates to his or her job function. Managers and supervisors also described the process for handling employees that do not meet the training objectives and requirements of the company.

Recently hired employees are aware of the general safety and health programs at the site and have a strong understanding of their future training requirements. In addition to the initial safety and health training received by all employees, BBWI continues to require a wide range of annual safety and health refresher training that keeps its employees informed on procedural and regulatory updates as well as on potential hazards.

All employees receive a number of formal safety and health training sessions. For example, all employees receive the Consolidated Safety, Health, and Environmental Training, General Hazard Communication, and General Employee Radiological Training. Additionally, job-specific training is also required for employees whose job requires that they work around certain hazardous materials or in hazardous environments. Examples of specific training areas include asbestos, emergency response organization, hoisting and rigging, nuclear safety, fall protection, and lockout/tagout. Additional facility-specific training is provided for specific hazards and skills at various INEEL facilities.

The INEEL Training Records and Information Network (TRAIN) is a database that serves as a central repository for training information on all workers, including subcontractors. Subcontractors are required to provide records of their training history and qualifications for inclusion in the TRAIN system. The TRAIN database is available to all employees, training coordinators, supervisors, and managers. Workers are given qualification cards for jobsite training verification. The qualification card indicates all training courses with their expiration dates. This information can also be accessed via computer.

Conclusions

The Team is confident that BBWI operates and sustains an effective Star-level DOE-VPP program and that it meets the applicable technical requirement for continued participation in the DOE-VPP. During the period of this review, the Team did not identify any specific technical or other weaknesses in the BBWI safety and health program.

Appendix

DOE-VPP Recertification Team Assignments

NAME/E-MAIL	ORGANIZATION	AREAS OF RESPONSIBILITY
Carlos Coffman Carlos.Coffman@eh.doe.gov	DOE, EH-31 Team Leader	Management Leadership
David Smith David.Smith@eh.doe.gov	DOE, EH-31	Hazard Prevention and Control
Steve Singal Steve.Singal@eh.doe.gov	DOE, EH-31	Safety and Health Training
Richard Dickson Dicksonrl@id.doe.gov	DOE, NE-ID	Worksite Analysis
Carol Henning Hennincs@id.doe.gov	DOE, NE-ID	Site Knowledge
Noble J. Atkins, Jr. Noble_J_Atkins@rl.gov	DOE-RL	Employee Involvement